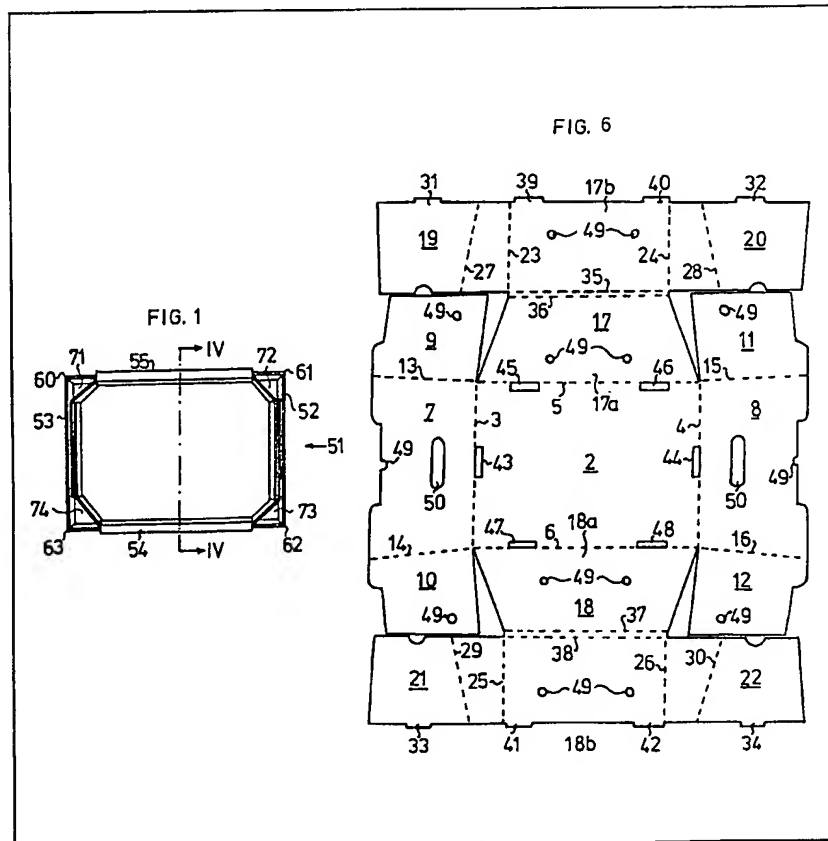


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 GB 1541133
 GB 1399471
 GB 1245142
 GB 1054778
 GB 899444
 US 3756499 A
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(54) A container

(57) A container (51) made from a foldable blank (1) has a rectangular bottom (2) and, extending upwardly and outwardly therefrom, end walls (52 and 53) and side walls (54 and 55). Each end wall (52, 53) comprises an end panel (7, 8), and end flaps (9 and 10, 11 and 12) are folded inwardly to define in part the side walls (54 and 55). Each side wall (54, 55) comprises a portion (17a, 18a) connected to, and extending upwardly from, the bottom (2) and a portion (17b, 18b) which is folded over

to embrace the end flaps (9 and 11, or 10 and 12) and extend downwardly to be secured to the bottom (2). Each portion (17b, 18b) has a pair of side flaps (19 and 20, 21 and 22) which extend towards the opposite side wall of the container, each side flap (19-22) having its lower edge supported on the bottom (2) and its uppermost edge defining a supporting surface, below the uppermost edge(s) of the container, for supporting the bottom (2) of another identical container. A lid may be formed from a separate blank.



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FIG. 1

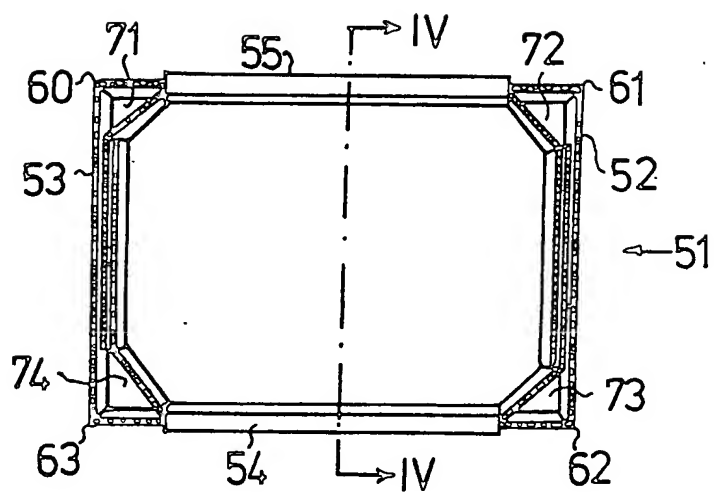


FIG. 2

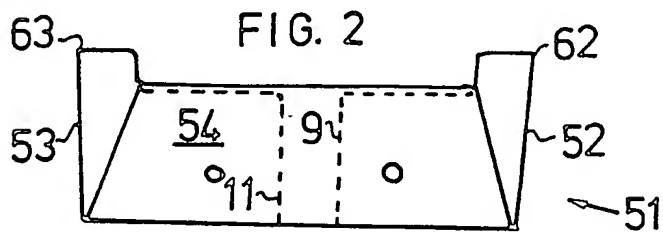
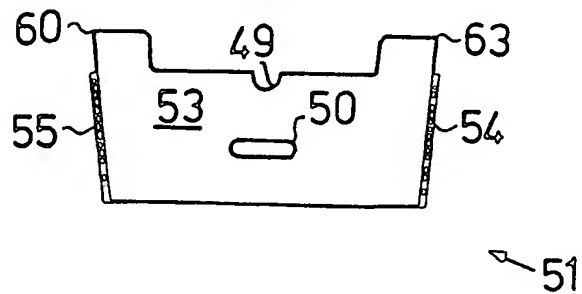


FIG. 3



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FIG. 4

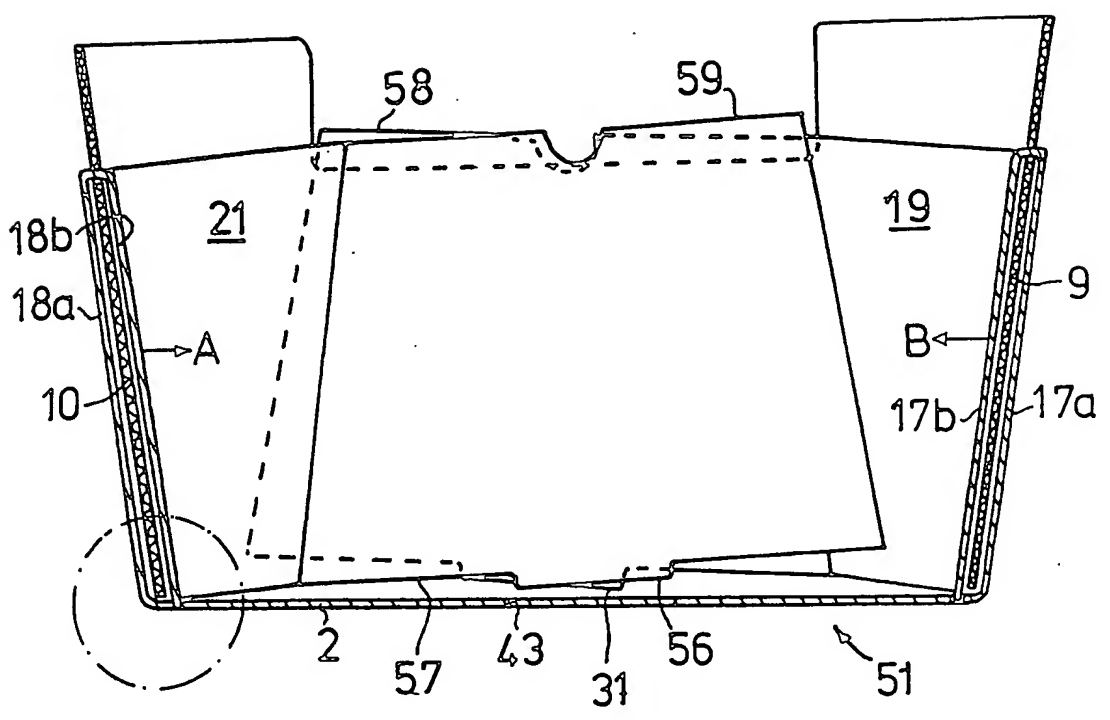
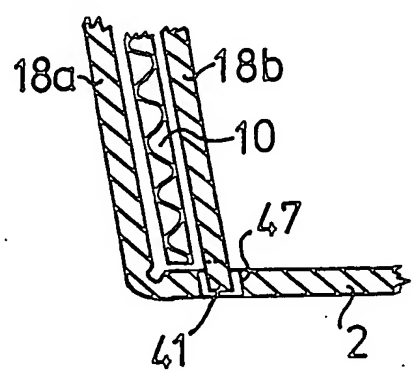
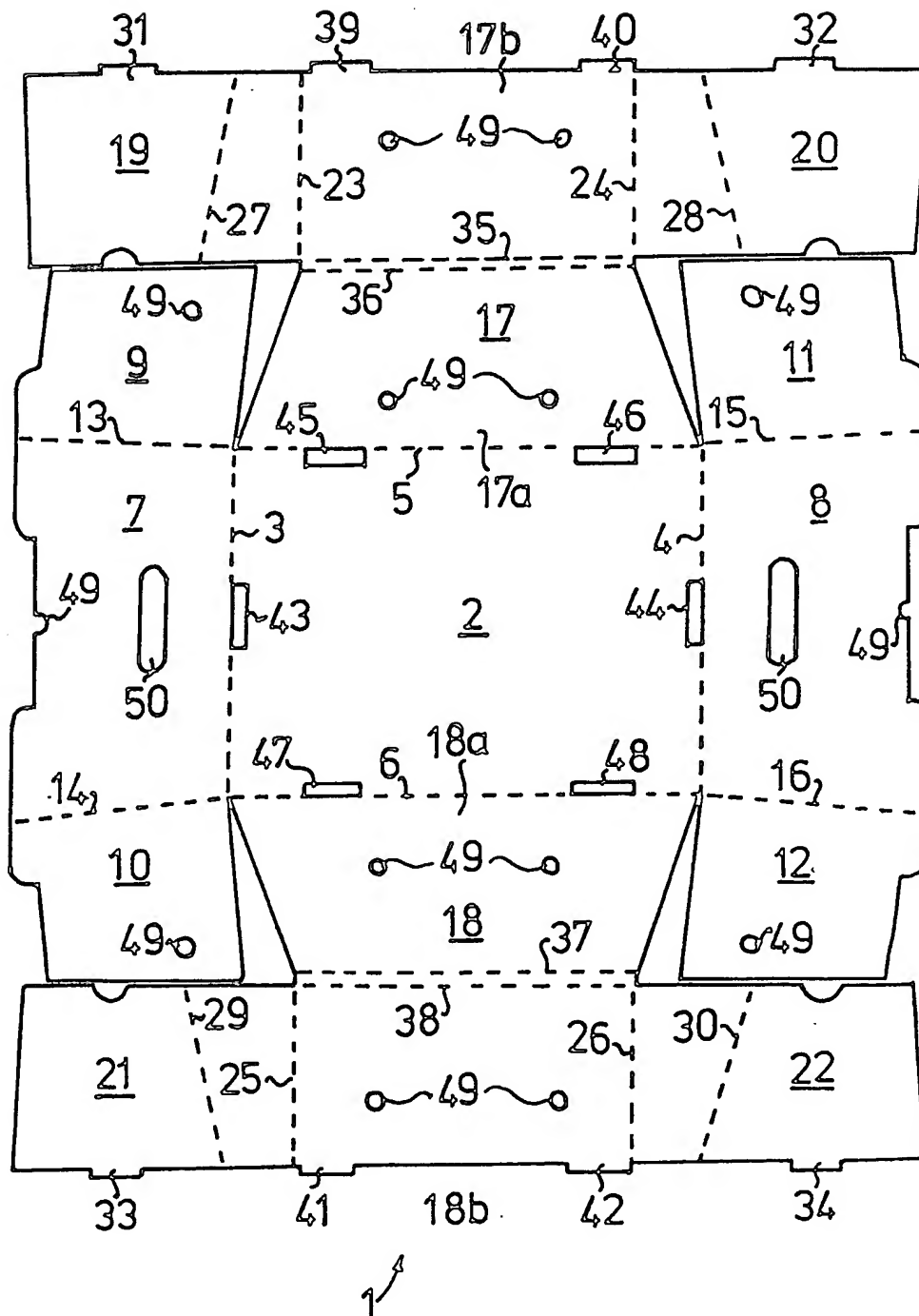


FIG. 5



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FIG. 6



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FIG. 7

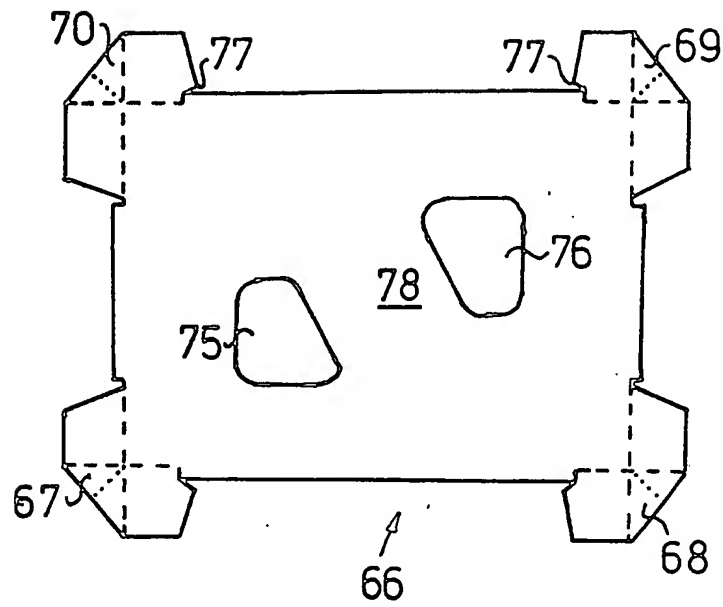
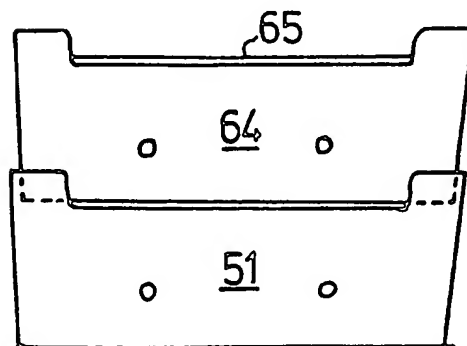


FIG. 8



SPECIFICATION

An improved container

5 This invention relates to a container and in particular, but not exclusively, a fruit or vegetable container.

According to the invention a container, made from a unitary blank of stiff, yet foldable sheet material, comprises a rectangular bottom panel, first and second end panels folded about first and second spaced apart and parallel end edges, respectively, of the bottom panel to extend upwardly and outwardly from the plane of the bottom panel to define, respectively, first and second outwardly inclined end walls of the container, each one of said end panels having first and second end flaps, integrally formed therewith, which are folded in the erected condition of the container so as to extend towards the other of said end panels, and first and second side panels having first and second proximate portions, respectively, integrally connected to, and folded to extend upwardly from, first and second spaced apart side edges of the bottom panel, respectively, and first and second distal portions, respectively, which are folded over to extend downwardly and be secured to the bottom panel, the folded over first and second side panels embracing said first end flaps and second end flaps, respectively, and defining with the latter respective first and second outwardly inclined side walls of the container which extend upwardly from the plane of the bottom panel, each of said distal portions of said side panels having first and second side flaps integrally formed therewith, each side flap extending towards the opposite side wall of the container in the erected condition of the latter with its lower edge adapted to be supported by the bottom panel and its uppermost edge or edges of the container, for supporting another identical container.

Suitably the distal portion of each side panel is releasably secured to said bottom panel by means of at least one tab, formed at the distal end of the distal portion, releasably interengaging with a respective opening formed in the bottom panel.

Typically each side flap extends diagonally across a respective corner of the erected container. Preferably both the said first side flaps overlap each other and contact the first end panel to define therewith the first end wall, and both the said second side flaps overlap each other and contact the second end panel to define therewith the second end wall. It will be appreciated that in this particular arrangement, each side and end wall is formed, at least partly, by three layers of sheet material thereby providing a rigid container able to withstand high compressive forces. Of course when the container is formed from a rectangular blank there will only be overlap of the pair of first (and second) side flaps when the ratio of container width to container height is less than a particular value, e.g. $2\frac{1}{2}:1$. Containers can thus be designed having having no overlap of the side flaps.

Each side flap may be designed so that its lower edge is positioned so that it deviates away from the plane of the bottom panel when no load is supported

on its uppermost edge, the deviation being reduced or eliminated when the uppermost edges of the side flaps support a load, e.g. one or more identical containers loaded with fruit or vegetables. Alternatively each side flap may be retained in a position in which its lower edge does not deviate from the plane of the bottom panel, such retention being effected by the provision of one or more tabs on each side flap which are releasably interengaged with a respective opening in the bottom panel. In either case, the act of reducing the deviation causes an inwardly directed force to be applied to each side wall, thereby reducing the tendency of the upper edges of the side walls to move apart when loads are supported on the container.

Suitably each side and end wall has a reduced height between its ends so that the container has upstanding corners defining the uppermost edges of the container, these upstanding corners facilitating stacking of containers one on another.

The container may be provided with a separate removable lid. Typically the lid is formed from a unitary blank of stiff, yet foldable sheet material and, when erected, may be releasably secured to the container to rest on the said supporting surface. The lid is suitably provided with integral downwardly extending folded corner tabs which interengage with locking means adjacent the corners of the container. The lid may also be provided with openings for enabling the contents of a container to be viewed.

Typically the sheet material from which the container is constructed is double-faced corrugated fibre board which may be impregnated to render it waterproof.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a plan of a container according to the invention,

Figures 2 and 3 are side and end views, respectively, of the container shown in *Figure 1*,

Figure 4 is a section, on an enlarged scale, taken on the line IV - IV of *Figure 1*,

Figure 5 is a detail, on an enlarged scale, of *Figure 1*,

Figure 6 is a plan of a unitary blank for forming the container shown in *Figures 1* to *5*,

Figure 7 is a plan of a unitary blank for forming a lid for the container shown in *Figures 1* to *5*, and

Figure 8 shows two containers, each according to the invention, stacked one on top of the other.

Figure 6 shows a blank, generally designated by the reference numeral 1, made of stiff, yet foldable sheet material (e.g. double-faced double corrugated board). In *Figure 6* the solid lines represent cuts and the dashed lines represent fold lines.

The blank 1 comprises a rectangular bottom panel 2 having end edges 3,4 and side edges 5,6. Integrally formed with the bottom panel 2 along edges 3 and 4 are end panels 7 and 8, respectively, each end panel 7 (8) having end flaps 9,10 (11,12) integrally joined thereto along fold lines 13, 14 (15, 16) respectively. Integrally formed with the bottom panel 2 along edges 5 and 6 are side panels 17 and 18, respectively, each side panel 17 (18) having a proximate

portion 17a (18a) and a distal portion 17b (18b) separated from the proximate portion by a pair of fold lines 35,36 (37,38) disposed parallel to the side edges 5 (6). Each distal portion 17b (18b) has a pair of tabs 39,40 (41,42) formed along a distal edge and a pair of side flaps 19,20 (21,22) foldable about fold lines 23,24 (25,26), respectively. The side flaps 19 to 22 are each provided with a fold line 27 to 30, respectively, and a tab 31 to 34, respectively.

- 10 The bottom panel 2 is provided with rectangular tab-receiving openings 43 and 44 along end edges 3 and 4, respectively, and tab-receiving openings 45,46 and 47,48 along side edges 5 and 6, respectively. A plurality of ventilation openings 49 and hand-hold openings 50 are provided in the blank 1.

A container 51, as shown in Figures 1 to 5, is formed by folding the blank 1 (all folds being made in the same direction). A detailed description of the folding operation will not be given since it will be obvious to those skilled in the art how the blank 1 must be folded in order to arrive at the container 51. It will be appreciated, however, that in the erected state of the container, tabs 39 to 42 will be received in the openings 45 to 48, respectively.

- 25 The container 51 has upwardly and outwardly diverging end walls 52 and 53 and upwardly and outwardly diverging side walls 54 and 55. Each side wall 54 (55) is defined by the side panel 17 (18) which is folded over to embrace the end flaps 9,11 (10,12). Each end wall 52 (53) is defined by the end panel 7 (8) and parts of the side flaps 19,21 (20,22). As can be seen in Figure 4, the lower edges 56 and 57 of the side flaps 19 and 21 deviate at an angle of a few degrees from the plane of the bottom panel 2. When a downward force is applied to the upper edges 58 and 59 of the side flaps 19 and 21, respectively, the tabs 31 and 33 are engaged within the opening 43 and the lower edges 56,57 rest upon the bottom panel 2. Once the tabs 31, 33 are engaged in opening 43 they will remain therein unless an upwardly directed force is applied to the flaps 19,21 to cause the flaps to be moved out of their engagement in the opening 43. The upper edges 58,59 define a substantially flat load-supporting surface. The tabs 32 and 34 are engaged in the opening 44 in a similar manner for the other end wall. The effect of moving the tabs 31,33 and 32,34 into openings 43 and 44, respectively, is to move the side walls 54,55 inwardly in directions A, B, respectively, to prevent or deter outward bowing of the side walls when the container supports a stack of similar containers.

It will be appreciated from Figure 1 that each flap 19 to 22 extends across a respective corner 60 to 63 of the container 51 thereby defining triangular-shaped pockets 71 to 74, respectively. The corners 60 to 63 of the container 51 extend above the upper edges of the flaps 19 to 22 and thus serve to locate the base of a similar container 64 supported on the upper edges of the flaps 19 to 22 (see Figure 8).

- 60 A lid 65 (positioned in container 64 in Figure 8) is optionally provided for each container, the lid being formed from a unitary blank 66 (see Figure 7) made of stiff, yet foldable sheet material e.g. a double-faced corrugated board of somewhat thinner gauge than that used for the blank 1. The blank 66

substantially rectangular in form having tabs 67 to 70 at each corner which are folded along fold lines to define downwardly extending corner tabs. In Figure 7 the fold lines are indicated by dashed lines for folds made in one direction and dotted lines for folds made in the opposite direction. When fitted to a container these folded corner tabs are received in the triangular pockets 71 to 74 (see Figure 1). Suitably the corner tabs and cooperating pockets 71 to 74 have interengaging locking means (e.g. one part of which may be the cut-away recess 77 in Figure 7) to enable the lid to be releasably secured to the container.

- The blank 66 is provided with two openings 75,76 to enable the contents of a container to be viewed.

The container with lid as hereinbefore described is more rigid and sturdy than other known vegetable trays. In particular the container and lid hereinbefore described can withstand a compression force, applied in the vertical direction, appreciably greater than conventional containers made of the same material and having the same external dimensions.

CLAIMS

- 90 1. A container, made from a unitary blank of stiff, yet foldable sheet material, comprises a rectangular bottom panel, first and second end panels folded about first and second spaced apart and parallel end edges, respectively, of the bottom panel to extend upwardly and outwardly from the plane of the bottom panel to define, respectively, first and second outwardly inclined end walls of the container, each one of said end panels having first and second end flaps, integrally formed therewith, which are folded in the erected condition of the container so as to extend towards the other of said end panels, and first and second side panels having first and second proximate portions, respectively, integrally connected to, and folded to extend upwardly from, first and second spaced apart side edges of the bottom panel, respectively, and first and second distal portions, respectively, which are folded over to extend downwardly and be secured to the bottom panel, the folded over first and second side panels embracing said first end flaps and second end flaps, respectively, and defining with the latter respective first and second outwardly inclined side walls of the container which extend upwardly from the plane of the bottom panel, each of said distal portions of said side panels having first and second side flaps integrally formed therewith, each side flap extending towards the opposite side wall of the container in the erected condition of the latter with its lower edge adapted to be supported by the bottom panel and its uppermost edge defining a supporting surface, positioned below the uppermost edge or edges of the container, for supporting another identical container.
- 125 2. A container according to claim 1, in which the distal portion of each side panel is releasably secured to said bottom panel by means of at least one tab, formed at the distal end of the distal portion, releasably interengaging with a respective opening formed in the bottom panel.

3. A container according to claim 1 or 2, in which each side flap extends diagonally across a respective corner of the erected container.

4. A container according to any of the preceding claims, in which both the said first side flaps overlap each other and contact the first end panel to define therewith the first end wall, and bottom the said second side flaps overlap each other and contact the second end panel to define therewith the second end wall.

5. A container according to any of the preceding claims, in which each side flap is designed so that its lower edge is positioned so that it deviates away from the plane of the bottom panel when no load is supported on its uppermost edge, the deviation being reduced or eliminated when the uppermost edges of the side flaps support a load, e.g. one or more identical containers loaded with fruit or vegetables.

6. A container according to any of claims 1 to 4, in which each side flap is retained in a position in which its lower edge does not deviate from the plane of the bottom panel, such retention being effected by the provision of one or more tabs on each side flap which is or are releasably interengaged with a respective opening or openings in the bottom panel.

7. A container according to any of the preceding claims, in which each side and end wall has a reduced height between its ends so that the container has upstanding corners defining the uppermost edges of the container, these upstanding corners facilitating stacking of containers one on another.

8. A container according to any of the preceding claims, in which the container is provided with a separate removable lid.

9. A container according to claim 8, in which the lid is formed from a unitary blank of stiff, yet foldable sheet material and, when erected, is releasably securable to the container to rest on the said supporting surface.

10. A container according to claim 9, in which the lid is provided with integral, downwardly extending, folded corner tabs which are adapted to interengage with locking means adjacent the corners of the container.

11. A container according to any of claims 8 to 10, in which the lid is provided with openings for enabling the contents of a container to be viewed.

12. A container according to any of the preceding claims, in which the sheet material of the container is double-faced corrugated fibre board.

13. A container according to claim 12, in which the double-faced corrugated fibre board is rendered waterproof.

14. A container constructed and arranged substantially as herein described with reference to, and as illustrated in, Figures 1 to 8 of the accompanying drawings.

15. A blank for making the container of claim 1 constructed and arranged substantially as herein described with reference to Figure 6 of the accompanying drawings.